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ABSTRACT

In "Situated Learning" (1991) Jean Lave and Etienne Wenger argue that mature identities motivate learning and that the image of master practitioners leads the social organization of learning opportunities, goals of newcomers, and relations between newcomers and others in a given community of practice. They further argue that learning is centripetal, that is, a trajectory that coalesces around a central image of mature practitioners in a specific community of practice. To find out about such communities of practice and the identities of thoughtful, reflective practitioners, the office of a nonprofit conservation corporation employing 22 people was studied concentrating on 5 new scientists recently hired. The corporation was quite successful at transforming these new scientists into socially responsible scientists. Responsible use of accurate science is a major component of the mature identity that leads in this organization. Organizational salience is given to the use value of scientific knowledge and to the rapid accumulation of this value by newcomers. In addition, situations call on newcomers to take responsibility for having and using knowledge. One figure illustrates identity formation in the organization. (Contains 3 references.) (SLD)

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Situated Science Learning at Work: Social Organization and Identity in a Non-profit Conservation Corporation[1]

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I. Introduction to this Study of Situated Science Learning

A. In Situated Learning (1991), Jean Lave and Etienne Wenger argue that 'mature identities motivate learning.' By this, they seem to mean that the image of master practitioners 'leads' the social organization of learning opportunities, the goals of newcomers, and the relations between newcomers and others in a given community of practice. Lave and Wenger also propose that learning is "centripetal"--that is, a trajectory that coalesces around a central image of mature practitioners in a specific community of practice. Along the trajectory, newcomers participate in "legitimate peripheral" activities whose content and momentum pull newcomers toward more central forms of participation within the community.

B. Relying on Lave and Wenger's ideas, I've become interested in the images of mature practitioners that lead in different communities of practice. I wondered whether there were communities of practice that promoted identities of thoughtful, reflective practitioners.

C. Two years ago, I began to look for settings outside of school in which such mature identities seemed to lead and in which scientific knowledge played some part. I was curious about what these identities actually looked like in practice, how they were taught and learned, and how they differed from the identities that lead in schools.

II. The CC Site and Research Methods

A. One of the sites I found is the state office of a non-profit conservation corporation--which I call "CC." It is devoted to preserving biodiversity by protecting land where species, habitats, or ecological processes are threatened. During my 18-month ethnographic study of CC, roughly twenty-two people, mostly conservation scientists and lawyers, worked there. Almost everyone was white, but surprising to me, half of the

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scientists were women and they held high status positions in the organization. I studied the whole organization but gave special attention to the five new scientists--all young adults making the transition from school to work--who were hired while I was there.

B. My findings indicate that CC was quite successful at transforming college educated scientists into socially responsible scientists. I think there are three reasons for this success.

1. First, the social identities that 'lead' within CC clearly stress accurate and responsible uses of scientific knowledge. The clear nature of CC's leading identities contrasts sharply with the fuzzy nature of the identities that often seem to lead in schools. In fact, Lave and Wenger suggest that there is *no* clear mature identity that contains the skills and competencies practiced at school. Thus, teachers and students don't really know *what* they are trying to produce, or *why* they are producing whatever they are producing.

2. Second, the learning trajectory experienced by CC newcomers encourages them to feel either special or naive *and* special. Although it is very important to the organization that newcomers experience a phase of naivete, the intense learning demands of this phase are coordinated with greatly enhanced opportunities for legitimate peripheral participation (unlike in schools, where naivete is prolonged and legitimate peripheral participation often blocked).

3. Third, during newcomers' naive phase, oldtimers help to construct newcomers' emergent goals, but not the means of achieving them. Thus, oldtimers create situations that require active constructions--not procedural applications--by newcomers.

III. What Social Identities Lead at CC?

A. CC is divided into two kinds of program areas: science areas including biologists, botanists, and ecologists; the business areas including lawyers, fund-raisers, and administrators. The scientists identify land worth protecting and build a case for its protection and how it will be accomplished. Then the business people take over to negotiate the land deals and raise the financial and community support necessary for the protection project.

B. However, to some degree, everyone is involved in both kinds of activities. During my study, social identities took shape around four different forms of the relation between science and business:

1. Scientists who 'know the science' but are uncomfortable using it in the business end of CC's work, e.g., to speak in public, raise money for CC, argue CC's case for environmentalism to ranchers, etc.;

2. Scientists who know the science and can use it accurately and responsibly[2] in both the scientific and business ends of CC's work;

3. Businessmen or women who know business but are not very interested in developing a command of conservation science; and

4. Businessmen or women who know business and are trying to learn more about conservation science as a part of doing their primary jobs well.

C. These social identities were organized in a status hierarchy. During most of my study, #2 was the highest status category, followed by #4, then #1, and then #3.

D. The newcomers I followed entered the organization with "beginning" versions of identity #1 (in the case of scientist newcomers) or #3 (in the case of non-scientist newcomers). Thus, the central learning "problematic" of the CC organization was to create the conditions whereby newcomers (holding identities #1 or #3) were transformed into the more "mature" CC identities (#2 for scientists; and #4 for non-scientists).

IV. The Learning Trajectory at CC

A. As I began the analysis of newcomers' learning trajectory at CC, I realized that I had to break it down into four phases. Figure 5 is an attempt to represent this finding in the form of Lave and Wenger's "centripetal" or coalescing imagery. Unfortunately, I don't have time to tell you much about what happens in these four phases. Suffice it to say that the social identities that seemed to lead in the transformation of newcomers were not consistently images of fully mature practitioners. Instead, sets of peripheral identities emerged and then faded or "spun off" and were replaced by another set.

B. In Phase I, newcomers and oldtimers share an image of newcomers as "beginning scientists." In Phase II, oldtimers treated newcomers as "naive," while newcomers continued to act as "beginners."

C. Phase III is the most significant. Newcomers talked about the need to reassess their own views of science within the context of CC; that is, to express their naivete. Oldtimers acted in two ways:

1. First, once newcomers entered the naive phase, oldtimers immediately

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[2] "Accurate and responsible use" of scientific knowledge has a particular meaning within CC. It refers to the ability to use state-of-the-art conservation science to argue for CC's approach to land and species protection.

began to create opportunities for newcomers to display their CC identities in public. Newcomers almost always saw these public appearances as coming too fast, before they were "ready" to display the identities they envisioned were expected. When oldtimers send newcomers out to face the public before newcomers think they are ready, oldtimers constitute the goals but not the means for newcomers to use. Oldtimers' actions place intense learning demands on newcomers. Newcomers search their environment for ways to resolve this problematic. Within CC, certain tools--specifically the ways of talking to the public about CC--are made salient by the oldtimers' task demands that newcomers speak about CC in public. Old ways of speaking in particular must be reassessed, and CC's version of how to speak effectively is close at hand. Of all the things in the CC environment that *might* be learned, ways of speaking in public about how CC uses scientific knowledge are made especially salient for newcomers in this phase. Consistent with the leading social identity within CC, these ways of speaking stress accurate and up-to-date conservation science as the basis for CC's land protection decisions; and responsible uses of conservation science to promote both the organization's purposes and well-informed conservation practices among the general population. What CC does not do is train newcomers in the scientific information, the hands-on experiences, or the personal stories that mature CC scientists use to do their jobs well. Newcomers have to develop these competencies themselves.

2. Second [and not represented on Figure 5], oldtimers began to differentiate newcomers by labeling them; that is, to identify them as a *certain kind of CC member*, e.g., "self-starter," "promising but needs support," etc. This was the point at which newcomers' personal identities began to diverge within the organization: In the way newcomers asked for help, they were given special, personal labels, and newcomers' distinctiveness as individuals within CC came to be identified. These personal identities have their own, somewhat separate momentum, and deserve a separate paper.

D. In Phase IV, both groups see newcomers as beginning mature CC scientists. The newcomers' problematic has been resolved, usually in CC's terms.

V. Use and Exchange Value of Scientific Knowledge

A. In the phases of the learning trajectory, identities embedded and transformed around specific versions of the tension between the use and exchange value[3] of scientific

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[3] My use of "use" and "exchange" value of knowledge comes from Lave and Wenger (1991). Knowledge has use value when it contributes to one's developing sense of mature identity in a community of practice. Knowledge has exchange value when it can be traded for something else, e.g., a grade, a degree. However, it should be noted that Lave and Wenger's use of these terms seems to cover only a portion of what Marx and Engels meant when they used the terms (for example, Lave and Wenger do not address the issue of how use value is consumed under capitalism; thus, they miss its exploitative

knowledge. CC required its newcomers--as a condition of more mature identity--to adopt a new and milder understanding of the tension: *from* displaying academic science in exchange for rights to the job *to* displaying accurate and up-to-date science in order to support CC and conservation practices in general. The need for this transformation put the organization at its most vulnerable with respect to its newcomers. If the new exchange value were emphasized too strongly, newcomers might reject it and leave the organization. If the new exchange value were not emphasized enough, the value of the newcomer to CC would be jeopardized.

1. In Phase III, newcomers' submission to organizational authority (i.e., accepting their naivete) brings with it (implies the promise of) "added value" of increased membership within CC. However, it also entails altering some previously developed identities and the commitments they embody. For newcomers to stay, this exchange (displaying lack of expertise in trade for the promise of increased membership) must be perceived as worthwhile.

2. CC's oldtimers' response was to add use value very quickly, in two ways: by making newcomers close-to-mature members, almost immediately upon their initial display of inexpertise, by quickly arranging occasions when newcomers had to perform publicly on behalf of CC; and by labeling the special characteristics of newcomers as emerging members.

B. The burden for this transformation is carried not so much by the physical tools of the learning environment (as, for example, in Hutchins, 1993), but by the social tools--the socially salient demands, categories, ways of talking, and their implications (identities) that lead the actions of individuals within the organization (cm. Mehan, et al., 1986).

VI. Conclusion

A. Three things distinguish this site of situated science learning:

1. The fact that socially responsible use of accurate science is a major component of the mature identity that leads within the organization;

2. The organizational salience given to the use value of scientific knowledge *and* the rapid accumulation of use value afforded to newcomers once they display their naivete; and

3. The situations that call on newcomers to take responsibility for having and displaying knowledge.

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effects).

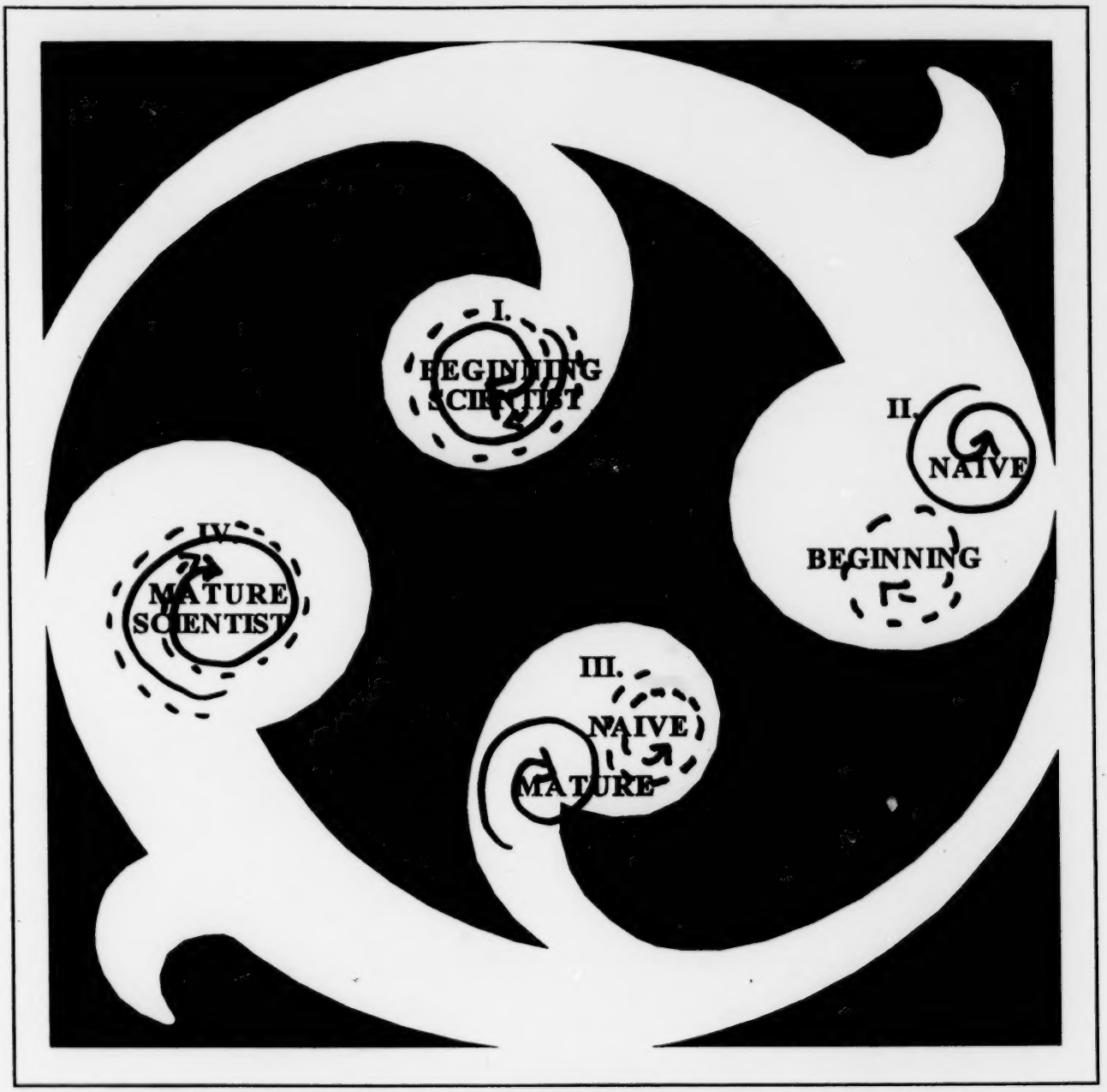
References

Hutchins, E. (1993). Learning to navigate. In S. Chaiklin & J. Lave (Eds.), Understanding practice: Perspectives on activity and context. (pp. 35-63). Cambridge: Cambridge University Press.

Lave, J. & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge: Cambridge University Press.

Mehan, H., Hertweck, A., & Meihls, J.L., (1986). Handicapping the handicapped: Decision making in students' careers. Stanford: Stanford University Press.

FIGURE 5



IDENTITY FORMATION: COALESCING TOWARD CENTER

Oldtimers **Newcomers**